Docket No.: 50023-150

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of   :

Tatsumi WATANABE, et al.   :

Serial No.:   :   Group Art Unit:
                                                      :
Filed: September 13, 2001   :   Examiner:
                                                      :
For: IMAGE PROCESSING DEVICE, IMAGE PROCESSING METHOD, AND
        RECORDED MEDIUM

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, DC 20231

Sir:

Prior to examination of the above-referenced application, please amend the application as follows:

IN THE SPECIFICATION:

Please amend Page 2 as follows:

An original image is read by an image input means 10 formed of CCD elements etc. On the original image, lossy compression (non-reversible compression) by the JPEG is carried out by compression means 3900 **In JPEG, Lossless compression and Lossy compression standard are proposed. Lossless compression is defined as the reversible compression the original image can be recovered when the compression image is expanded, and Lossy compression is defined as the non-reversible compression the original image can not be recovered when the compressed image is expanded. Fig. 39 shows the example of block diagram in case of Lossy compression**. That is, discrete cosine transform of the original image is performed by discrete cosine transform (DCT) means 3906 whereby the original image is transformed into signals in the frequency space, and the obtained transform coefficient is quantized by quantization means 3907 using a quantization table 3901.

The results of this quantization are transformed into a code string by entropy encoding means 3908 on the basis of an entropy encoding table 3902, and this code string is stored on a storage medium 15. This processing is continued until after the compression of all the original images is over. In this connection, a lossless compression (reversible compression) method in which an image can be restored without distortion is also proposed for the JPEG standard. When the lossress compression is used, the compression ratio, which is defined as the ratio of original image size to the compressed image size, is very low. Therfore, lossy compression is generally used. But when lossy compression is used, the original image are not exactly reconstructed because of the quantization error as in FIG. 39 and the rounding error by DCT. Of the two reversible factors, the quantization error has bad influence on the quality of the reconstructed image especially.

Please amend Page 11 as follows:

It is possible for Reduced Images (RI) generating means 101 to extract the frequency area corresponding to a specified size (preview size, for example) from the low frequency components **obtained by LFC extracting means 100** and to generate a reduced image by performing inverse orthogonal transformation on that components.

Please amend Page 24 as follows:

In FIG. 1, the processing steps by image input means 10 and OI orthogonal transforming means 11 for orthogonal transform of original images are the same as those in Embodiment 1 and will not be described. LFC extracting means 100 extracts low frequency components according to the number of picture elements of Reduced Images (RI) display means 102 that displays thumbnail images. RI generating means 101 performs inverse orthogonal transform on the low frequency components **extracted by the LFC extracting means 100**, and thumbnail images are displayed on RI display means 102.